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GEOGRAPHIC SCHOOL BULLETINS

Published Weekly by

THE NATIONAL GEOGRAPHIC SOCIETY

(The National Geographic Society is a scientific and educational Society, wholly altruistic, incorporated as a non-commercial institution for the increase of geographic knowledge and its popular diffusion. General Headquarters, Washington 6, D. C.)

January 22, 1945. Vol. XXIII. No. 15.

1. Winter Darkness on Western Front Aids German Offensive Stabs
2. Construction Progress of 1944 Paced by Military Engineers
3. Allies in Europe: 3. Yugoslavia
4. Sierra Leone Diamond Find Adds to World's Gem Lore
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U. S. Navy, Official

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GEOGRAPHIC SCHOOL BULLETIN

HOW TEACHERS MAY OBTAIN THE BULLETINS

The Geographic School Bulletins are published weekly throughout the school year (thirty issues) and will be mailed to teachers in the United States and its possessions for one year upon receipt of 25 cents (stamps or money order); in Canada, 50 cents. Originally entered as second-class matter January 27, 1922; re-entered as of April 27, 1943, Post Office, Washington, D. C., under Act of March 3, 1879. Copyright, 1945, by National Geographic Society, Washington 6, D. C. International copyright secured. All rights reserved. Quedan reservados todos los derechos.

Winter Darkness on Western Front Aids German Offensive Stabs

LONG, dark winter nights, as well as bad winter weather, are fighting on the side of the enemy along the western front. These factors greatly aided the Germans in the preparation for and launching of their year-end drive that nearly reached the Meuse River and Namur, deep in Belgium.

Few observers back home realize how short are the days and how long the nights in west central Europe in winter. Mighty Allied air forces, even in good weather, have only a few hours of daylight in which to strike the enemy.

Aachen, largest German city yet taken by American forces, and typical battle-line marker, lies near the 51st degree of north latitude. Although in that zone in late December and early January about eight hours elapse between sunrise and sunset, effective daylight usually is cut sharply at both ends of the day by heavy fog (illustration, next page).

Lights of Peacetime Europe Burned Long

Since the winter sun is low in the south its rays are dimmer than those of the high summer sun. Thus, even when fog is absent, both surface and flight visibility are always reduced at this time of year.

In peacetime, city dwellers in central Europe often kept lights burning until after 10 o'clock in the morning and frequently turned them on again as early as two p.m. Even on the clearest midwinter days, morning and evening twilight periods are of little use to Allied flyers; so that for a period of 14 to 16 hours a day the "eyes of the Army" find the battle area blacked out.

It was doubtless during these long hours of darkness that the Germans made their elaborate preparations to break through the Allies' line. Under nature's blackout, the enemy can fill highways with marching men and long processions of tanks and trucks, and can shift trainloads and boatloads of supplies fully protected by the darkness.

As spring approaches, the daily period of sunlight will lengthen and the period of darkness will shorten fairly rapidly. By the end of January, along the 50th degree of latitude which cuts across the area of the German bulge into Luxembourg and Belgium, there will be 9 hours and 16 minutes between sunrise and sunset.

Thirty days later, on March 2, the sunlight period will have lengthened to 11 hours and the interval from the earliest morning twilight to latest evening twilight to 14 hours and 28 minutes. At the maximum in June, the period of darkness will have entirely disappeared; then twilight will extend throughout the night and there will be 16 hours and 22 minutes of sunlight.

Sunny Italy as Far North as Maine

The important geographic fact that European lands can be developed and heavily populated much farther north than the lands of North America is shown by tracing the 50th degree of latitude westward across the Atlantic. This battle-front parallel cuts through north Newfoundland and passes 80 miles south of Hudson Bay.

Following the 50th degree farther west, one finds that it goes just south of the Aleutians and Kamchatka and forms the boundary line between the far-northern Japanese possession of Karafuto and Russian Sakhalin.

Even the battle lines in "sunny Italy" are as far north as Bangor, Maine, and

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Relang from Three Lions

IN SARAJEVO COFFEE SHOPS, THE PACE OF PREWAR LIFE WAS SLOW

This Bosnian city in central Yugoslavia, where a hot-blooded nationalist killed an Austrian archduke to precipitate the first World War, is noted for its cool, oriental-looking coffee shops. Tradesmen and artisans from the near-by Turkish Market gathered here, when they had earned enough to live on until the next day, to pass the hours until nightfall. Many Sarajevans are Moslems: not Turks, but native Bosnians whose ancestors accepted Islam in the 15th century. These Slavic converts sometimes cling more steadfastly to Mohammedan ways than do the Turks themselves. Bosnia is merely one of the several distinct regions that went into the making of modern Yugoslavia (Bulletin No. 3).

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Construction Progress of 1944 Paced by Military Engineers

DURING the past year, engineers in military work garb performed near-miracles of construction, often within range of enemy fire. Their civilian brothers, engaged in war-essential projects at home, shared with them the 1944 spotlight of engineering achievement.

Navy Construction Battalions (Seabees), landing with the troops on every liberation front, built airstrips of coral or of waffle-iron-on-sand on scores of Pacific islands (illustration, cover). In portable sawmills they cut millions of feet of lumber with which they built huts, mess halls, and offices. They repaired harbor installations, notably at Cherbourg, Brest, and Le Havre; built roads and bridges; salvaged landing boats and equipment—all under combat conditions.

The Seabees, with Britain's Royal Engineers, towed caissons and pier equipment built in England across the Channel to the Normandy coast. They erected two harbors with breakwaters, enclosing a water area larger than the port of Dover. Time alone will fully reveal the part played by military construction men in United Nations' invasion successes of 1944 (illustration, next page).

Most Massive Chinese Construction Job Since the Great Wall

U. S. Army Engineer Corps troops that had pioneered the Alaska Highway completed a new supply road from Ledo, in India's northeastern province of Assam, southeastward deep into northern Burma. Their aim was to effect a junction with the original Burma Road inside China's Yunnan Province.

A 2,000-mile oil pipeline in the same area is being laid by United States engineers from Calcutta's tanker docks eastward across the Himalayan hump to Superfortress bases in Yunnan, China. Already carrying oil and gasoline into northern Burma, the completed line will be 50 per cent longer than the Big Inch line from Texas to New Jersey. A 1,300-mile 24-inch pipeline from Corpus Christi, Texas, to the Cleveland-Pittsburgh industrial area was also completed.

In western China, Army engineers supervised the building of Bomb-Tokyo bases for B-29 bombers. Between January 24 and April 24 a force of about 430,000 Chinese farmers worked with hands, hoes, and baskets, completing a project described as the most massive Chinese construction job since the Great Wall of China. On Saipan, air force engineers in five months completed coral-rock runways from which B-29's in November began frequent attacks on Japanese cities.

In aeronautics for 1944, the B-29 Superfortresses marked a new step in volume production of giant planes. The principle of jet propulsion was developed in planes and rockets, and in two types of flying bombs developed by the Nazis.

Engineers Harness Waters for Control and Use

The nation's biggest war plant began airplane engine production on Chicago's south side early in the year. Dwarfing the Ford Willow Run plant and the Chrysler Detroit tank arsenal, the main building of the new Chrysler Dodge unit covers 82 acres, has nearly 4,000,000 square feet of floor space.

The Kentucky Dam, on the Tennessee River near Paducah, became the 21st dam in operation under the Tennessee Valley Authority. Fontana, largest and highest dam in the eastern United States, on the Little Tennessee River in North Carolina, is the only other TVA dam now under construction.

California's vast power and irrigation program moved forward as the last con-

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Yellowstone National Park. December and January sunlight along the Italian front is approximately three-quarters of an hour longer than on the front in Belgium. Washington, D. C., at the same time, has 9 hours and 25 minutes of sunlight—about one hour and 20 minutes more than the Belgium battle area.

The Philippine sector, being close to the Equator, has no dearth of sunlight even in midwinter. Twilight, however, is considerably shorter than in west central Europe. Over Manila, near the 15th parallel of north latitude, American bombers have more than 11 hours of sunlight. Over Tokyo in the vicinity of the 35th degree of latitude, Superfortress crews find the sun above the horizon for about 10 hours; below the horizon, for 14 hours. On the long flights from and to their bases the greater period of darkness is a welcome aid.

Note: The regions where the Allied forces are fighting the Germans along the Belgian-German-French frontiers may be located on the National Geographic Society's Map of Germany and Its Approaches, which appeared as a supplement to the July, 1944, *National Geographic Magazine*. Latitudes on the western front may be compared with those of Pacific battlefronts by referring to the Society's Map of the World, supplementing the *Magazine* for December, 1943. A price list of maps may be obtained from the Society's headquarters, Washington 6, D. C.

See also, "Weather Fights and Works for Man," in the *National Geographic Magazine* for December, 1943*; and in the GEOGRAPHIC SCHOOL BULLETINS: "Germany's Weather Not 'Made in Germany'," October 23, 1944; "Italy Is 'Surprise Stocking' of Varied Weather Samples," March 13, 1944; and "Rain Hampers Both Sides in New Guinea Battles," November 16, 1942. (*Issues marked with an asterisk are included in a special list of Magazines available to teachers in packets of ten for one dollar.*)

Bulletin No. 1, January 22, 1945.

Merlin Minshall

THE MISTS OF MORNING SHROUD CENTRAL EUROPEAN SCENES IN SECRECY

Though such a picture as this conveys romance and mystery in peacetime, it represents one of the western front's greatest military factors in wartime. Early morning and late afternoon fog obscures the already dim twilight periods of Europe's midwinter days and makes observation of enemy movements more difficult. Daylight periods are shorter along the western front than in any part of the United States because the battle area is as far north as Newfoundland. Even on a day of "good" weather, Allied flyers have only about five to eight hours of perfectly clear flying time. Here a boat waits for the curtain of fog to lift before proceeding through Ludwigs Canal, a waterway connecting the Rhine system with the Danube. This little-used canal is 135 miles east of the battle front, but in the same latitude as the Saar.

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Allies in Europe: 3. Yugoslavia

(This is the third of a series of bulletins about countries where Allied forces are operating or may operate.)

YUGOSLAVIA presents a bizarre assortment of geographic conditions, cultures, politics, and religions. Born of the first World War, it has been ravaged in the present war by Axis conquest and torn by competing resistance and regional movements.

Like Czechoslovakia, Yugoslavia was formed, after the 1914-18 struggle, by the union of historically diverse elements. Into it went the two former kingdoms of Serbia and Montenegro, parts of western Bulgaria, and the prewar Austro-Hungarian possessions of Slovenia, Croatia, Slavonia, Bosnia, Hercegovina, Dalmatia, and Voivodina (map, next page).

The combination made Yugoslavia about the size of Wyoming or Oregon, with an area approaching 96,000 square miles. To pull together its varied segments, the nation set up nine new provinces whose boundaries cut across the old political frontiers.

Racial Unity Is Marred by Vendetta-Type Feuding

A common denominator in Yugoslavia is racial unity. Most of its nearly 16,000,000 inhabitants are Slavs, speaking a basically Slavic language, although they use both the Cyrillic and Latin alphabets. The country's name, Yugoslavia, which replaced the earlier "Kingdom of Serbs, Croats, and Slovenes," means South Slavia.

On the other hand, passionately-followed customs and faiths (including Roman Catholic, Serbian Orthodox, and Mohammedan) differ sharply from region to region. As in blood-feuding Albania, next door, it has been said of Yugoslavia that "a difference of opinion there can be more fatal than ordinary disease."

Many of the differences can be traced to historic grudges and dissensions, developed when Balkan areas were under the domination of Serbs, Turks, or Austro-Hungarians. But physical formation also causes regional differences. Natural regions coincide in many places with old frontiers. Mountain ranges accent the broad divisions, separate internal areas. Differences in terrain and degrees of fertility dictate varied forms of livelihood.

Northwest Slovenia, for instance, with its mountains and its peacetime tourist trade, resembles near-by Austria, which once ruled it. Croatia, Slavonia, and Voivodina stretch eastward through foothills and open valleys into rolling country of wheat and cornfields, similar to the plains of Hungary. Hercegovina, Bosnia, and Montenegro are essentially mountain areas, wild and inaccessible in many parts, inhabited by rugged, independent people used to making a meager living the hard way.

Serbia Served as Nucleus of Kingdom, Magnet for Wars

More mountains feature coastal Dalmatia, a narrow strip of land facing Italy, where underground rivers pop up to bring unexpected pockets of fertility in the barren limestone karstlands. In Dalmatia, influenced since Roman times by the power across the Adriatic, the port of Zara was held by prewar Italy, along with the island of Lagosta farther south.

Largest of the Yugoslav regions, and nucleus of the kingdom set up in 1918, is inland Serbia. It is hill and mountain country for the most part, sloping on the north into open plains where the Danube, Sava, and Morava river systems meet. Serbians have long made their living chiefly by farming and cattle raising, with some development of the considerable mineral wealth of the region, notably copper, chrome, and antimony.

The Yugoslav capital, Belgrade (Beograd), is situated in Serbia, at the junction of the Danube and Sava rivers. In the opening days of the first World War, defenseless Belgrade (then capital of Serbia) was bombarded by the Austrians from across the Danube boundary line. The heavy damage which the city suffered during that war was repeated in even greater degree more than a quarter of a century later, when the Germans launched their invasion of Yugoslavia by air attacks that devastated the capital and killed many thousands.

Serbia, astride vital communication routes from central Europe to the south and southeast, occupies a highly strategic position which has accounted for its periods of greatest power and tragedy. This nation was the dominant Balkan power in the 14th century, before the Turks established the Ottoman Empire over all of southeast Europe except Montenegro.

Centuries later, after the grip of the Turks was broken, a revived Serbia lay across the path of German expansion to the east. Its ambitions for uniting the Slavs of the Balkan Peninsula made it also a potential rival of the Austro-Hungarian Empire. The struggle of 1914-18

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crete was poured on Shasta, second highest dam in the world (560 feet). Water from the Friant Dam in the San Joaquin Valley began on June 4 to pour through the new Madera Canal, 37 miles long.

The 13-mile Adams Tunnel of the Colorado-Big Thompson project was holed through the Continental Divide near Estes Park, Colorado, in June. This 10-foot aqueduct brings surplus Colorado River headwaters from the western slope to productive farm land in northeastern Colorado. New York City's water supply was augmented by the opening of the Delaware Aqueduct, an 85-mile tunnel.

About 6,000 men worked to complete a 410-mile gap in the 1,000-mile leg of the Inter-American Highway between Mexico City and the Guatemala border. A road link between Hearst and Geraldton in Ontario north of Lake Superior, in May, connected the loose ends of the Trans-Canada coast-to-coast highway. In the same month the Overseas Highway, 123 miles long from Florida City to Key West, reconstructed and shortened 17 miles by using the abandoned rail route, was opened.

A new 520-mile road from the Pacific to the navigable Amazon River system was opened with completion of the Lima-Pucalpa Highway across the Andes in Peru. On the Peruvian coast 250 miles north of Lima, Chimbote is the center of Peru's greatest industrial and agricultural expansion. Rail, port, and housing facilities, a hydroelectric power plant, and iron and steel mills were developed.

The 12-mile cutoff from Portage to Whittier on Prince William Sound reduces by 52 miles the rail distance from Alaska's coast to the interior. This U. S. Army Engineers' job substitutes the sheltered port of Whittier for the more exposed harbor at Seward. One-fourth of the cutoff is tunnel.

Near San Francisco, an oil-well drill dug the world's deepest hole, 16,246 feet. A great achievement in machine construction was the world's greatest mechanical calculator, a 51-foot colossus using 500 miles of wire, on duty for the U. S. Navy at Harvard, and "capable of solving any mathematical problem."

Bulletin No. 2, January 22, 1945.

U. S. Army Air Forces

AIRBORNE ENGINEERS BUILD AN AIRSTRIP IN A BURMA CLEARING

Paving the way for the aerial invasion of Burma in March, 1944, this glider-borne vanguard of the First Air Commando Force leveled off a landing field here in 12 hours. One hundred C-47's from Indian bases then landed with men and equipment. This remote jungle clearing, far behind Jap lines, became "Broadway," a hub of combined American-British-Chinese operations that have now won back all north Burma.

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Sierra Leone Diamond Find Adds to World's Gem Lore

DISCOVERY of a 530-carat diamond in Britain's west African colony of Sierra Leone has stirred world-wide curiosity and comparison. Since the first diamond caught appraising eyes with its fiery gleam, search for this most precious of all stones has pocked the secretive earth in country after country.

The diamond—exalted symbol of dynasty, unfortunate object of theft and murder—is just a chunk of crystallized carbon—a cousin to common coal. It is so hard that it will cut rock, glass, and steel. The world has made "diamond cut diamond" the summation of hardness. The Greeks had a word for this quality in 327 B.C. From their *adamas,* "the unconquerable," the diamond got its name.

Grind off the outer crust of a rough diamond, and the crude stone begins to reveal the play of colored light that makes it prized by king and commoner. Cut and polished by skilled hands, diamonds sparkle in royal crowns, seal betrothals by the million, give their name to important anniversaries, and are ready cash the world over. Diamonds have been credited with magical powers as healing touchstones, as dispensers of good and ill fortune.

Africa, Biggest Producer of Diamonds, Produces Biggest Diamonds

For centuries India was the premier source of fabulous diamonds, among them the "Koh-i-noor" presented to Queen Victoria by the East India Company; the lost "Great Mogul"; the "Pitt" or "Regent" bought by France's Duke of Orleans; the "Orlof," gift of Prince Orlof to Empress Catherine II of Russia. These stones ranged from 106 to 287 carats when cut.

South Africa's rise as top diamond producer began in 1867 with the discovery of deposits along the Orange River. For many years mines in the Orange Free State and the Transvaal provided about 90 per cent of the world's supply. African competition developed in the Belgian Congo, the Gold Coast, Angola, South-West Africa, and Tanganyika. Diamonds are also mined in Borneo, India, Surinam (Netherlands Guiana), Australia, Sumatra, China, and the United States.

Biggest find in South Africa was the "Cullinan," turned up in the Transvaal's Premier Mine. In the rough it weighed 3,106 carats, more than a pound. Given to King Edward VII by the Union of South Africa, the stone was cut into nine parts, the largest being over 500 carats. Discovery of the 726-carat "Jonker" made world news in 1934.

Some South African mines bore about 2,000 feet into the so-called "blue ground." They have several levels connected with shafts up which power hoists raise cars known as skips. Workmen break the ground with picks, cart rock and earth to the shafts and dump it into the waiting skips.

New World's Diamonds Include Gem and Industrial Varieties

Hoisted to the surface, the rocky mass is spread out to weather. After several months' exposure the mass crumbles, is ready to give up its treasure. The clods are put on a sloping, grease-smeared, corrugated-iron table. Water plays over the table, the diamonds cling to the grease, the refuse is washed away.

Brazil has turned up some large stones, notably the "Star of the South" in 1853, and the more recent "Vargas" diamond. Diamonds for industrial use—the black carbonado and bort—have been Brazil's chief contribution.

Pike County, Arkansas, is the most important domestic field. Yield totals

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was begun with the war declaration of Austria against Serbia.

During the period between the two great European wars, Yugoslavia was subject to both internal and external pressures. Inside the nation, regional and nationalistic groups struggled for control. Outside, several neighboring countries coveted lost territories which had gone into the making of Yugoslavia. In 1934, the king, Alexander I, was assassinated while on a visit to Marseille. Many feared this would precipitate war, as in 1914 the murder of the Archduke Franz Ferdinand in Sarajevo (illustration, inside cover) had started the first World War.

Yugoslavia was forced into the present war in the spring of 1941, when the Nazis invaded after a sudden revolt that overthrew the government then preparing to sign up with the Axis. The unequal conflict was short, and young Peter II, the new king, set up a government-in-exile. Yugoslavia was partitioned, chiefly between the Germans and Italians, although Hungarians and Bulgarians also occupied parts of the country. Croatia, like Slovakia of Czechoslovakia, received puppet status as an "independent" area.

The material benefits which the Nazis had hoped to gain through use of Yugoslavia's strategic minerals and other resources were sharply curtailed by the resistance movements which early challenged the new regime. In spite of friction between guerrilla groups, the nation became an important battle area holding down many divisions of German troops. Following victories by the fighting Partisans in the last year, the Allies sent in considerable military supplies, with Soviet Armies liberating large areas of northeastern Yugoslavia.

Note: Yugoslavia is shown on the Society's Map of Europe and the Near East.

See also "The Clock Turns Back in Yugoslavia," in the *National Geographic Magazine* for April, 1944; "Echoes from Yugoslavia" (16 photographs), June, 1941; and "Jugoslavia—Ten Years After," and "Rustic Life in Jugoslavia" (25 natural color photographs), September, 1930*.

Bulletin No. 3, January 22, 1945.

DANUBE AND ADRIATIC HEM IN YUGOSLAVIA'S PLAINS AND MOUNTAINS

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Small Islands Have Been Doorsteps to the Philippines

AS THE YANKS close in on the Philippines, no island large enough for an airfield or an observation post has been too small to serve the advancing forces of liberation. United States troops have launched some of their attacks on the Philippine group from islands too insignificant to have been previously in the news.

Garakayo, Morotai, and the Asia and Mapia Islands were virtually unknown until the drive toward the Philippines swept across them. From these islets U. S. bombers now hop off for frequent raids on the Philippines.

LITTLE ASIA ISLANDS ARE NAMESAKES OF HUGE CONTINENT

The Asia Islands, where Yanks wiped out a Jap observation station, lie about 130 miles northwest of the "turkey head" at New Guinea's west end. These small spots of land present a geographic paradox. They bear the name of the world's largest continent, 1,700 miles to the northwest.

The three islands—Fani, Igi, and Miarin—together measure less than seven miles in length including the intervening stretches of water. Reefs extend north and west. There is no harbor in the group. Tall trees and matted vines tangle into jungle on the low islands. On Miarin is a fresh-water well. Normally the islands were uninhabited. Natives living on the near-by Ajoe Islands, 35 miles to the north, occasionally went over to the Asias to catch turtles.

MAPIA ISLANDS BETWEEN NEW GUINEA AND THE PHILIPPINES

In landing on the Mapia Islands in the Netherlands Indies Allied forces were cleaning up land specks in the southwestern Pacific by-passed in General MacArthur's drive to the Philippines.

Mapia Eilanden to their Netherlands owners, the dots of land are also known as the St. David Islands. They lie about 130 miles northwest of Geelvink Bay, which dents the back of the New Guinea turkey's neck. The closest island of the Philippines is only 675 miles to the northwest.

Three low islands comprise the Mapia group—Pegun, Bras, and Fanilda. They form an oval atoll about 9 miles long north to south. A narrow winding channel leads through the west side of the atoll to the rock-studded lagoon. In good weather small ships can anchor safely off the north side of the islands.

MOROTAI A BASE FOR ATTACK ON THE PHILIPPINES

Morotai, where American forces are stationed, is one of the most northern of the Moluccas. It lies just off the tip of much-bombed Halmahera. Morotai is 300 miles southeast from the southern point of the Philippine island of Mindanao.

Part of the Netherlands Indies, Morotai is an oval island about two-thirds the size of Delaware. Mountains in the northeast rise to 4,000-foot heights. The southwest is flat, favorable to the building of flying fields.

The principal village is Wajaboela on the west coast. There in normal times steamships to New Guinea stopped every eight weeks. Passengers and freight were transferred to shore in lighters. Around the island are a number of anchorages, some of them partially protected.

The natives, of mixed Malayan stock, live mostly along the coast in such places as Hapo, Sopi, Aroe, and Pitoe. Some village names double up into such fancy titles as Berebere and Boesoboeso.

The islanders' fish diet is supplemented by sago, which grows along the river

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more than 10,000 stones, one weighing more than 40 carats. Diamonds have also been found in Virginia, California, North Carolina, Ohio, Wisconsin, and Indiana.

Artificial diamondlike crystals are no trick for the electric furnace. Whether the "stones" emerging from sugar dissolved in iron melted at 5,000 degrees Fahrenheit are true diamonds seems debatable.

Styles in diamond cutting change with the years. Composition and design of the gem strive for ever-greater "flash." Standard patterns are the "brilliant" with 58 facets, 33 above and 25 below; and the "rose" with 12 to 32 facets above and one below. Cutting and polishing may take half the weight of the rough stone.

Tools of the trade are few and simple. Essentials are a firmly-positioned mount for holding the stone in the shaping operation; a lathe for spinning the hard diamond used to shape the rough stones; a small, power-driven metal disk so mounted that its film of diamond dust and olive oil can be kept in contact with stones held in adjustable iron tongs above it. Cutting a single facet may take hours. Splitting a big stone into smaller gems is a job of skill and patience.

Union of South Africa Air Service

KIMBERLEY'S GAPING MOUTH YAWNS IN DESERTED BOREDOM

The "Great Hole" stopped volume production in 1909, but other mines upheld South Africa's world leadership in diamonds. For the duration, however, all Union of South Africa mines are closed. This crater reached to the "blue ground," an underground formation immensely rich in diamonds. Geologists believe Kimberley is an old volcano vent which through the centuries filled with sedimentary deposits containing diamond pebbles. In the 1870's a diamond rush to Kimberley, like the California gold rush, brought thousands of fortune seekers to this corner of the world and hastened the development of South Africa.

banks and in the southwest. In the interior are dammar forests, yielding a gum used in making varnish. The villagers collect it as a cash crop.

GARAKAYO IS ANOTHER YANK FOOTHOLD

Garakayo, occupied by U. S. troops, is a steppingstone in the 100-mile-long string of islands that form the Palau group. The Palaus mark the westernmost end of the Caroline chain. Directly west of them lies Mindanao in the Philippines, across an islandless stretch of the Pacific Ocean. The tropical Palaus are about 8 degrees north of the Equator. On these coral isles coconuts, breadfruit, papayas, and bananas grow in profusion. Competing with the human islanders for this wealth of food are the enormous fruit bat (illustration, below), rats that rival cats in size, and crabs that climb trees.

Garakayo is 14 miles northeast of Angaur, the southernmost of the Palau group; 20 miles south of Koror, the administrative headquarters for all the islands of Japan's Pacific mandate. Garakayo is a low coral islet a mile in diameter.

Connected with Japan by air and ship service, the Palaus were extensively colonized by the Japanese. German before the first World War, they were mandated to Japan by the League of Nations.

Note: Morotai appears on the Society's Map of Southeast Asia and Pacific Islands. A large-scale inset of the Palau Islands on this map shows Garakayo.

For additional information about Pacific islands which have become battlefields, see "Mindanao, on the Road to Tokyo," in the *National Geographic Magazine* for November, 1944; "Springboards to Tokyo," October, 1944; "Hidden Key to the Pacific," June, 1942*; and "Mysterious Micronesia," April, 1936*.

Bulletin No. 5, January 22, 1945.

Willard Price

THE ISLAND DOORSTEPS TO THE PHILIPPINES HARBOR SUPERFORTRESS BATS

Micronesia's giant fruit bat, with its tremendous wingspread, is the Superfortress of the bat world. Flapping about in the trees of these steppingstones to the Philippines, it is to an ordinary bat what a B-29 is to a Kaydet trainer. Some of these "flying foxes" are more than four feet from wing tip to wing tip. They are sleepy creatures, spending daylight hours hanging downward from tree limbs. At dusk they take off from their tree-branch hangars to feast upon the varied fruits of the islands.

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